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## 7.1 Introduction

The main goal of this paper is to build after-the-crisis scenarios for European regions, using both qualitative reflections and a “quantitative foresight” methodology created by the authors (Capello et al. 2008), and referring in particular to globalization processes, role of emerging economies, energy trends and new roles of rural areas.<sup>1</sup>

The methodology applied to develop these scenarios starts from a general reflection on what the crisis has brought (and will bring) about. The simple extrapolation of past trends does not seem meaningful in a context where numerous factors of strategic significance are changing (globalization, energy paradigm, climate change, social orientation, recent economic crisis, etc.) and are likely to give rise to a clean break with respect to the past. Huge contradictions emerged in the recent past, which were highly responsible for the present crisis: the debt-driven aggregate demand in advanced countries; the financialization of western economies, and the bizarre evidence of new emerging countries like China and BRICs, relatively

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<sup>1</sup>The paper is based on a large ESPON 2013 “targeted” project, entitled “*SPAN-3: Spatial scenarios—new tools for local and regional territories*”, led by the Politecnico di Milano and directed by R. Camagni and R. Capello (ESPON SPAN 2010). The authors wish to thank Ugo Fratesi, of the Politecnico di Milano, who helped in carrying out the updated estimation and simulations with the MASST regional econometric model for all EU countries (at Nuts-2 level), and Jacques Robert who participated in the structuring of the new, after crisis scenarios. For the results of the whole project, see Camagni and Capello (2011).

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poor countries, supporting western real incomes through a wide supply of low-price goods, but also western (and particularly the U.S.) balance of payments. All these elements in fact are due to change in the long but also in the short run.

These qualitative reflections are used as the basis for what we call quantitative foresights, in that they are neither pure forecasts, aiming to obtain precise values of specific economic variables in the future, on the basis of extrapolations from a system of past socio-economic relations, nor foresights, mostly qualitative in nature, with the aim to provide an image of the future based on radical breaks. Our quantitative foresights require first of all a scenario building exercise whereby an image of the future is constructed on the assumption that a discontinuity will emerge in the main elements or driving forces that influence and regulate the system. The changes in the driving forces are translated into quantitative assumptions for a macro econometric regional growth model created by the authors, called MASST (an acronym recalling its structural feature, namely a macroeconomic, social, sectoral, territorial model: Capello 2007; Capello et al. 2008, 2011),<sup>2</sup> a methodology as neutral as possible, leaving to the model the task of producing the trends and behavioural paths of European regions up to 2025.

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## 7.2 Qualitative Scenarios: Some Methodological Aspects

The need for anticipatory and far-looking economic visions has always induced economists to seek reliable methodologies with which to produce insights into what the future will look like. Among existing alternative methodological exercises, the distinction between forecasts and foresights is useful, and helps specify the approach used in this work. In general, a forecast aims to obtain precise values of specific economic variables in the future, on the basis of extrapolations from a system of past socio-economic relations. Exactly because they extrapolate from past tendencies, forecasts yield the best results in a short-term perspective. The aim of a forecasting exercise is, in general, to achieve a quantitative value in a certain year, paying little attention to the intermediate path, or to the feedback and adjustment processes by which the end value is determined.<sup>3</sup>

Foresight is a radically different exercise. It is mostly qualitative in nature, and its aim is to provide an image of the future based on radical breaks, on structural effects which destroy past tendencies. A new technological paradigm, new socio-cultural models, new political regimes are all examples of structural breaks in the elements regulating an economic system which give rise to completely new and radically different paths to the future. A foresight is a possible, probable and sometimes desirable image of the future under the assumption that these events, or perhaps only one of them, will occur. Contrary to forecasts, foresights do not

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<sup>2</sup>For the technical features of the MASST model, see Appendix 1 and ESPON Project 3.2 (2005).

<sup>3</sup>On forecasting methodologies see, among others, (Armstrong 1985; Hawkins 2001; Hendry and Clements 2001; Loomis and Cox 2000).

address the dynamic processes that will produce the final outcome; rather, they explore the general consistency of the final image by analysing all the adjustment processes that are likely to happen. In general, a foresight is built on an image of what the future will look like (explorative projections), but also of what the future should look like (desirable projections). Foresight provides insights into the future based on a structural and radical break with the past, and assuming in general a long-term perspective (usually decades).<sup>4</sup>

The logic of our methodology is not new. It was applied already in other scenario exercises, the most recent of them aiming at capturing the different effects of a long term vs. a short-term, fast recovery of countries from the economic crisis (Capello et al. 2011). The peculiarity of this methodology is to be neither that of a pure forecast nor that of a pure foresight. Our approach can be defined as a *quantitative foresight*, in that it involves scenario building whereby an image of the future is constructed on the assumption that a discontinuity will emerge, and this discontinuity is inserted in the form of new values of the levers of our forecasting econometric model.

In this particular scenario, the discontinuity lies in the structural breaks provoked by the crisis, and in particular on the perception that economic agents and governments will have of these breaks. What is called a “*reference scenario*” is built, under the assumption that there will be a perception that structural changes will happen, but policies will not act in an effective way. This scenario will be compared to a second one, called the *pro-active scenario*, in which changes will be perceived and even anticipated; the capacity to pro-act by macroeconomic, industrial and legislative policies will be large. The third scenario, the *re-active or defensive* one, will be based on the assumptions that changes are not fully perceived by economic actors. The general attitude will be a defensive one, protecting existing structures, sectors and firms; development assets will be more similar to the past, and risks of low development rates higher.

The construction of these three “integrated” scenarios builds upon a previous reflection on single “thematic” scenarios on the likely trend of some general driving forces: globalization, technology, demography, settlement structure, energy and oil prices. The difficulty lies in assuring an internal consistency among the hypotheses concerning these single trends, combining them in a coherent way inside three differentiated scenarios, with labels that suggest the main character of the single scenarios. These scenarios do not differentiate with each other in terms of economic performance, which is only the final outcome, but in terms of internal interrelated trends of the main driving forces and social attitudes. The subsequent translation of the hypothesized and likely exogenous trends into quantitative levers of the model allows achieving a crucial goal: modeling and calculating the many feed-back effects that will take place among the different dimensions of the forecasting mechanism and among the different European territories: technological and

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<sup>4</sup>On foresight methodologies see, among others (CEC 2004; Miles and Keenan 2000; UNIDO 2004).

productivity trends, GDP and income growth, employment growth, migrations, spatial spillover effects, etc.

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## **7.3 The Three After-Crisis Scenarios**

### **7.3.1 The Reference Scenario**

The reference scenario is not to be considered as a trend scenario in the conventional sense, because the simple extrapolation of past trends does not seem meaningful in a context where numerous factors of strategic significance are changing (globalization, energy paradigm, climate change, social orientation, recent economic crisis, etc.) and are likely to give rise to a clean break with respect to the past. Huge contradictions emerged in the recent past, which were highly responsible for the present crisis: the debt-driven aggregate demand in advanced countries, highly sensitive to the conditions of the financial markets and widely responsible for the emergence and sudden explosion of the real estate bubble; the financialization of western economies, leading to an overlooking of the problems of the “real” economy; the bizarre evidence of new emerging countries like China and BRICs, relatively poor countries, not only supporting western consumption (and real incomes) with a wide supply of low-price goods, but also supporting western (and particularly the U.S.) balance of payments with huge acquisitions of Treasury bonds and financial assets. All these elements in fact are due to change in the long but also in the short run.

The balance of the geo-political game will be different with respect to the past. Winning assets will be different. The dollar will not be any longer the only reference currency for international exchanges. A “regionalized” globalization will probably take place, with the large “triad” areas (Europe, America, East and South Asia) becoming more independent and more internally integrated. BRICs will enter progressively in the medium and high technology game and will become sources of international demand, given the increase of internal per-capita incomes. On the other hand, the purchasing power in western countries, particularly of some groups (retirees, civil servants, low income groups), will be particularly affected.

Hopefully, a lower real wage increase in western countries and the already mentioned “regionalized” globalization will enable some recovery of manufacturing activities in Europe, especially if a number of new technologies will develop: nanotech, biotech, transport technologies, new materials, green economy.

While European demography stagnates and the ageing process intensifies, a number of changes are likely to crystallize in the macroeconomic context. The regionalization of the globalization process reduces the amount of external FDIs into Europe, with the exception of those (sovereign funds, etc.) aiming at taking over European businesses of strategic character (technology, brands, etc.). European investments are less substantial but more concentrated on Europe and on its external periphery and neighborhoods (including Ukraine, Moldova, Turkey,

Egypt, North Africa). The integration of currencies takes place at the scale of large world regions (North America, Europe, Asia, Gulf States), but these fluctuate more between themselves at that scale. The US dollar loses its importance as reserve currency. The deflationist effect of Asia (mainly of China) on the world economy is strongly attenuated and progressively disappears. Inflation increases as well as real interest rates. The growth of real income in Europe is more modest than before. The purchase power of specific groups (retirees, civil servants, low income groups) is particularly affected. The new generations maintain their standards of living in selling their heritage and properties. The regionalization of globalization enables the recovery of manufacturing activities in Europe. Disparities in the productivity of the main economic sectors increase, especially between advanced economic functions (financed by capital) and basic services (paid by incomes, including social transfers).

Growing oil and gas prices will favor investments in oil and gas exploration and discovery, and the Arctic region will become a strongly targeted region in this respect; regional tensions and possible conflicts are not excluded. The expansion of nuclear energy will be constrained by the progressive depletion of uranium resources.

The most important effect of all these changes and contradictions, and the element on which new hopes for re-launching growth in advanced countries will be the emergence of a new paradigm: the “*green economy paradigm*”. Its importance resides in its pervasiveness (hence the term “paradigm”): it will enter almost all aspects of the economy and the living conditions. Many production sectors will be directly touched: energy of course, but also manufacturing, transport, building and construction, tourism, and even agriculture (production of bio-fuels and, most interesting, the emerging phenomenon of “zero-km-agriculture”, due to revitalize in a sustainable way many peri-urban areas). A number of new technologies will emerge during the coming 15 years which will have significant impacts on the economy, especially in the fields of energy production and use, including the processing of biomass, nanotechnologies, biotechnologies and transport systems.

The emergence of the green-economy paradigm will provide a relevant part of the new source of aggregate demand, desperately needed at the international scale; and consequently new jobs in advanced but threatened countries and a reduction in dependency on fossil fuels. In brief, it may boost a revival of endogenous growth in Europe.

The perception of these structural changes, and consequently the speed of the international recovery, is hypothesized in the reference scenario and important changes will happen, but policies will not act in an effective way.

In the reference scenario, the profitability of renewable energy increases, but political support is insufficient to generate a radical change of the energy paradigm. The progress of renewable energy sources remains dispersed and fragmented, with low synergy effects. The economy hardly benefits from this process.

In general terms, metropolitan areas with advanced economic functions and technological poles will be favoured with respect to cities with an economy depending upon intermediate or low technologies. After recovery, tourist functions

will progress moderately. The residential economy progresses because of accelerating population ageing in Europe. Rural areas will be affected, up to a certain extent, by the deregulation of the Community Agricultural Policy (CAP), especially the wine producing regions. A number of rural areas will benefit from the production of renewable energy, but only a modest part of the available potential is being exploited. Immigration concentrates in metropolitan and tourist areas.

Growing oil and gas prices favour investments in oil and gas exploration and discovery. The Arctic region becomes a strongly targeted region in this respect. Regional tensions and possible conflicts are not excluded. The expansion of nuclear energy is constrained by the progressive depletion of uranium resources. The profitability of renewable energy increases, but political support is insufficient to generate a radical change of the energy paradigm. The progress of renewable energy sources remains dispersed and fragmented, with low synergy effects. The economy hardly benefits from this process.

### **7.3.1.1 Territorial Aspects of the Reference Scenario**

The catching up process of the economies of Central and Eastern Europe continues, but at a significantly lower speed than before the economic crisis. It is also more differentiated among the countries concerned. Despite this process at macro-scale, regional disparities are likely to increase within the EU at a lower scale. The two-speed Europe is accentuated, with advanced economic functions concentrating more and more in metropolitan regions. New manufacturing activities also concentrate in well-developed regions. In addition to main metropolitan regions, second-rank cities and metropolitan areas are also beneficiary. Regions most affected by the crisis are mainly manufacturing regions with low or intermediate technologies and a relatively high intensity of manpower, both in Western and Eastern Europe.

Other regions affected by the crisis and where recovery will prove difficult are those which had, up to the crisis, booming activities in the sector of building and construction. Lasting difficulties may also affect regions where economic growth before the crisis was largely based on financial speculation and related financial services or on specific fiscal niches. Numerous tourist regions have also been affected by the crisis, but tourism is very volatile and the recovery of these regions will depend upon the general level of the European economy. The evolution of rural areas will be contrasting and heterogeneous, with a number of rural regions being affected by the deregulation of the CAP and trade liberalization in the context of the WTO, others benefiting from the opportunities of biomass and renewable energy production.

The regions where demographic factors may act as a constraint on the regional labor markets are those where the economic recovery is substantial in a context of rapid population ageing. Immigration further concentrates on large cities, generating a low cost housing market at their periphery. It is also substantial in tourist areas and in areas attractive for the retirees. In these regions, it favors the increase of fertility rates.

### 7.3.2 The Pro-active Scenario

The pro-active scenario is based on the assumption that the decisions adopted at international level aiming at curbing down the speed of climate change are efficiently used as an opportunity to generate significant economic growth throughout Europe. The implementation of the scenario requires the active involvement of economic actors and of the civil society. A wide spectrum of sectors—manufacturing, energy, construction, agriculture, transport, R&D and advanced services—will benefit from the spread of the new “green economy paradigm”; aggregate demand will benefit from new investment opportunities. The perception of changes brought about by the economic crisis is clear, and changes even anticipated; the capacity to pro-act by macroeconomic, industrial and legislative policies is large.

This pro-active scenario for Europe is part of a more global context in which the large emerging countries are pulling up the world economy while moving towards more technology-intensive activities. The international financial order is stabilized by the diversification of currency reserves, the dollar having lost its monopolistic position.

Economic growth is stronger and recovery more rapid than in the reference scenario. It is not limited to Europe, but includes also the USA and Asia. The more developed economies and also the BRICs invest in less-developed countries, especially in Africa, Latin America and Southeast Asia, in order to develop the local markets and to create demand, which is just the opposite of a protectionist attitude.

In Europe, the strategy consists of increasing significantly technological investments boosting productivity, but generating in a first stage higher unemployment rates. Only after a period of 5–7 years, employment is growing again. Higher skills and qualifications are required. The race for stronger tertiarization is being attenuated thanks to a rapid development of the “green economy” which creates jobs both in R&D and in manufacturing activities. Services move towards higher added value segments. In the context of a more regional globalization, higher financial services are being re-centered on Europe. Through higher competitiveness and stronger public support, European enterprises are less in danger of being taken over by non-European groups or sovereign funds.

The concretization of the “Green Economy” is far from being an easy task. Numerous local authorities choose to take action in relation to climate change, but their resources are limited by the impacts of the economic crisis. The potential investments of SMEs are constrained by difficulties in obtaining bank credits. The transition from carbon-related energy systems towards a new energy paradigm based more largely on renewable energy sources is affected by the levels of necessary investments and by constraints of profitability. The international harmonization of policies is also a difficult issue which generates distortions.

The progressive emergence of new economic growth and the creation of significant amounts of new jobs after a few years generate however trust in the strategy related to the “Green Economy”, so that more and more businesses and households

invest, with encouraging returns on investment. This leads to a mass effect which ensures sustained economy growth and strengthens social cohesion.

In the demographic sector, fertility rates are subject to a revival, favored by the positive economic evolution, but their impact remains a long-term one. The shortage of population of working age in a growing number of regions favours the immigration of qualified manpower.

### **7.3.2.1 Territorial Impacts of the Pro-active Scenario**

The territorial impacts of the pro-active scenario change somewhat over time. During the first phase (5–7 years) growth is concentrated on metropolitan areas. In a second stage, production activities related to the “green economy” diffuse towards cities of second and third level and also towards regions of central and Eastern Europe as well as towards the more peripheral regions of Western Europe. Therefore, the scenario favors, in the long run, a higher degree of polycentricity of settlement structure than the reference scenario.

In addition to economic aspects, the adoption of the Green Economy has important impacts on the morphology and organization of cities. More compact urban forms are being developed in order to take advantage of the expansion of public transport networks. Urban expansion remains however more contained and compact than in the Reference scenario, the greening of cities and the further development of ICT limits the motorized mobility for working and leisure purposes. Favorable economic development has a positive impact on social cohesion.

A significant number of rural areas benefit from the “green economy”. The positive economic climate favors the development of the residential and tourist economy which is beneficial to small and medium-sized cities as well as to rural areas with an attractive natural and cultural heritage.

### **7.3.3 The Defensive Scenario**

The defensive scenario assumes a slow recovery from the crisis in western economies and Japan, resulting from a weak reactivity to the changing context and a lower perception of the new technological opportunities. Global demand remains modest. In the USA, domestic demand is much weaker than before, because households put higher priority on savings than on consumption. The BRICs maintain their comparative advantage in low-cost production. They however progress also in more technology-intensive sectors, competing more intensely with Europe. Few foreign investments are made in the less developed countries of the world. Inflation is lower than in the reference scenario because of low wage policies in Asia with global deflationist impacts. Low interest rates feed new speculative bubbles, threatening the stability of the global economy. Maintaining the dollar as the only reserve currency works in the same direction.

In this scenario, changes brought about by the crisis are not fully perceived by economic actors. The general attitude will be a defensive one, protecting existing



structures, sectors and firms; development assets will be more similar to the past, and risks of low development rates higher.

Europe does not enter the new technological paradigm and fails to modernize significantly its productive activities. Because of insufficient public support and modest mobilization of economic actors and civil society, the Green Economy cannot make a breakthrough. Service activities do not significantly qualify.

In the medium range (5–7 years) European exports are maintained, but they comprise a large share of products with modest added value. Employment is artificially protected in the medium range and the situation worsens afterwards because of insufficient competitiveness in the global context. Cost-competitive policies are maintained in central and eastern Europe in order to attract FDIs. Their impact is however limited. Exports are slowing down and unemployment increases. More European businesses are taken over by non-European groups. When profits of such businesses are declining because of the lack of investments in R&D and in productivity improvements, they are left out by the new owners. The European population declines in the long-range, the natural evolution being negative and immigration being strictly controlled.

### **7.3.3.1 Territorial Impacts of the Defensive Scenario**

In the medium range, changes in the regional patterns are modest. The catching up process of Central and Eastern Europe is however significantly affected by the fall of FDIs after the crisis of 2008/2009. The European settlement pattern is not significantly modified.

Important territorial changes take place however later on. The competitiveness of a number of activities in the sectors of agriculture, manufacturing industries and services is then declining because of insufficient adjustments and productivity-related investments. Most affected regions are those with fordist and neo-fordist manufacturing activities. A significant number of rural regions are confronted with serious problems of decline of yields from agriculture and loss of jobs in small, no more competitive manufacturing industries. The non-emergence of the Green Economy hinders the development of alternative activities in the production of renewable energy. Investments in this field remain dispersed and insufficiently profitable. The depressed economic situation does not favor the development of the residential, patrimonial and tourist economy in rural areas. The result is that outmigration from numerous rural regions intensifies, not only in central and eastern Europe. Population ageing increases significantly and demographic decline affects numerous rural regions in the long-range. The differentiation of rural areas accelerates.

New service and manufacturing activities concentrate mainly in and around metropolitan areas in order to minimize risks. There is not sufficient economic potential and elasticity in the economy for a more polycentric development of settlement systems. Interregional migrations, which are more intense than in the reference scenario, favor large cities. Medium-sized and smaller cities not under metropolitan influence and strongly dependent upon manufacturing activities, are particularly affected. The internal evolution of metropolitan regions is raising

concern. Urban sprawl accelerates under the influence of growth of population and activities and also of growing social tensions in the core cities. Social segregation, insecurity and criminality are growing in inner-city areas and densely populated suburbs, where unemployment is significant. Traffic congestion increases and the share of non-polluting cars remain low.

### 7.3.4 Expected Economic Performance Trends

After crisis scenarios have been presented, starting from the contradictions that characterised the world economy in the recent past, and that are mostly responsible for the present crisis.

One can speculate on the intensity with which structural changes will take place; however, most of them are already in place, and for this reason a plausible “trend” scenario is not meaningful. A “reference scenario” taking into account a number of recent structural changes in addition to more long-term evolutions seems more appropriate; this scenario will register the effects of the structural breaks leading to a permanent loss of wealth, with growth starting again from this eroded base. Figure 7.1a presents this logical expectation.

Against this background, the capacity (or incapacity) of the European economy to take advantage of the new global situation and its internal potentialities can be anticipated in the form of two contrasting scenarios. In particular:

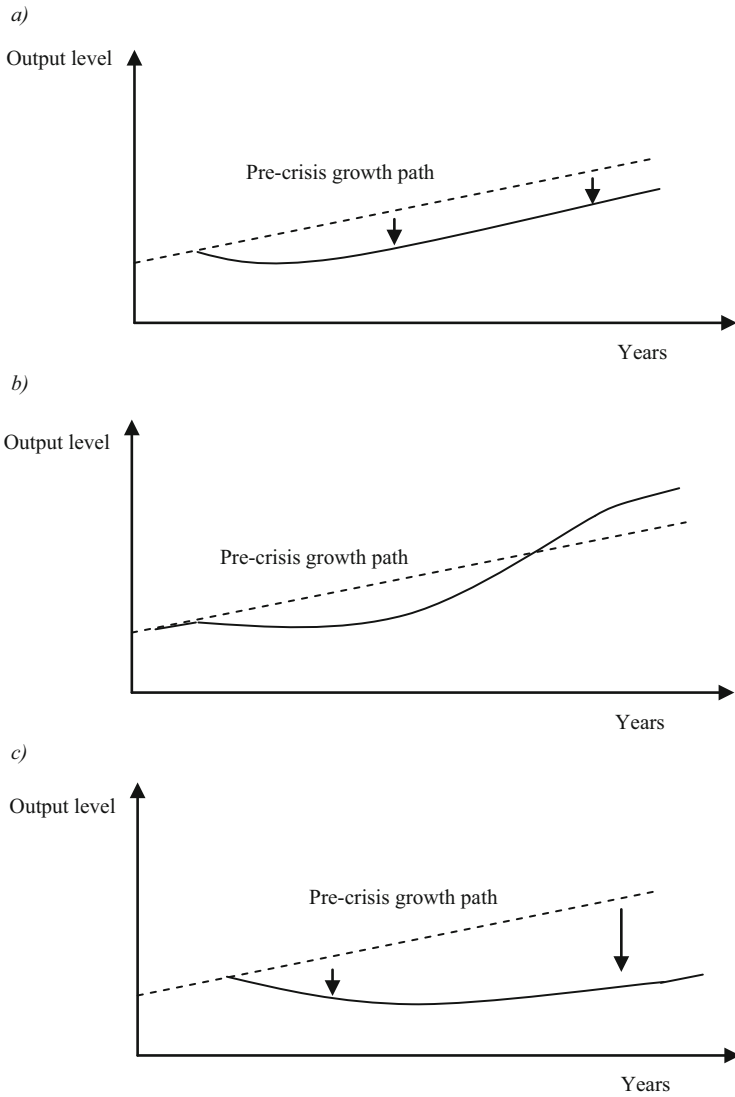
- a scenario in which these structural changes are perceived and even anticipated, and where the capacity to pro-act and re-act is large; this scenario is expected to enable Europe to make a full return to an earlier growth path and raise its potential beyond pre-crisis output levels (Fig. 7.1b);
- by contrast, a scenario in which these changes are not fully perceived by economic actors, anchored to the traditional development assets, thus risking low development paths and a permanent loss in wealth (Fig. 7.1c).

In aggregate terms, these expectations of ours are totally in line with the ones proposed by the European Commission in the *Europe 2020* Report (CEC 2010), bringing in our opinion a new rationale and justification to them.<sup>5</sup>

Our expectations based on qualitative thinking require empirical validation, both in aggregate terms and at a territorially disaggregated level of analysis. This step is achieved by running simulations through the econometric MASST model, able to produce tendencies and behavioural paths of regional GDP at European NUTS2 level under alternative assumptions.<sup>6</sup>

<sup>5</sup>In the *Europe 2020* Report the three growth paths are labelled respectively as “Sluggish recovery”, “Sustainable recovery” and “Lost decade” (CEC 2010, p. 7).

<sup>6</sup>For the assumptions used in the three scenarios, see Appendix 2.



**Fig. 7.1** Alternative growth paths out of the crisis: logical expectations. (a) reference scenario, (b) a pro-active scenario, and (c) defensive scenario. Source: Capello et al. (2011), elaborations on CEC (2010)

## 7.4 Aggregate and Regional Results

Figure 7.2 reports the aggregate per capita GDP level from 2010 to 2025 forecasted by the model in the three scenarios presented above, compared to a baseline scenario which extrapolates the recent pre-crisis trends without taking into consideration the structural breakdown generated by the crisis itself.

In line with our conceptual expectations, the reference scenario shows a lower GDP per capita trend with respect to a scenario in which the structural breakdowns are not taken into consideration (Fig. 7.2a); when the latter are perceived, and even anticipated by policy makers, the capacity of the economic system to grow is much higher than in a “baseline” scenario (Fig. 7.2b). The defensive scenario, in which economic actors and governments do not adjust their behaviour to these structural changes, shows a much lower per capita GDP trend than the baseline scenario (Fig. 7.2c).

Interestingly enough, these aggregate results show a strong regional difference. In the reference scenario, GDP growth rate is positive for almost all regions, but some regions considerably outperform while in others growth looks sluggish. Results indicate that growth within countries will be mainly a centripetal process, with core areas as leaders in all countries. Many second rank areas are also thriving, whereas all rural areas are sluggish (Map 7.1).

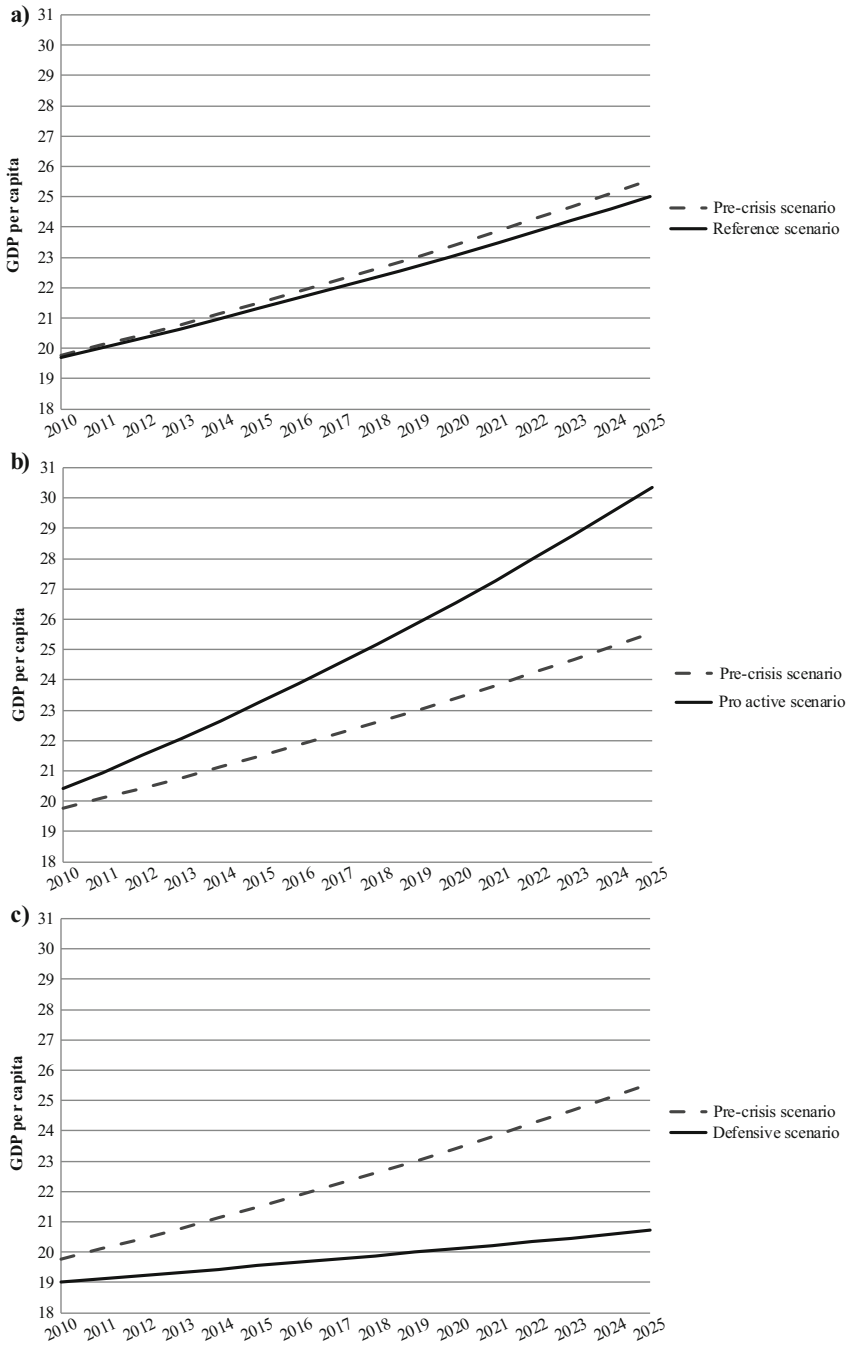
In Eastern Europe all capital regions, such as Budapest, Sofia, Warsaw, are among the best performers overall, sometimes (as is the case of Prague, Bratislava and Bucharest) also pulling the regions just around them. Rural areas in the East are on the contrary severely hit, similarly to all rural areas around Europe, being affected by the deregulation of CAP and increased international competition.

In the West, first ranking regions are those which generally outperform the others, as shown by the performances of areas such as Stockholm, Copenhagen, Munich, Frankfurt, Brussels, Lisbon, Athens. However, second order areas are also thriving, as shown by the examples of Malmö, Hertfordshire, Edinburgh, Gent.

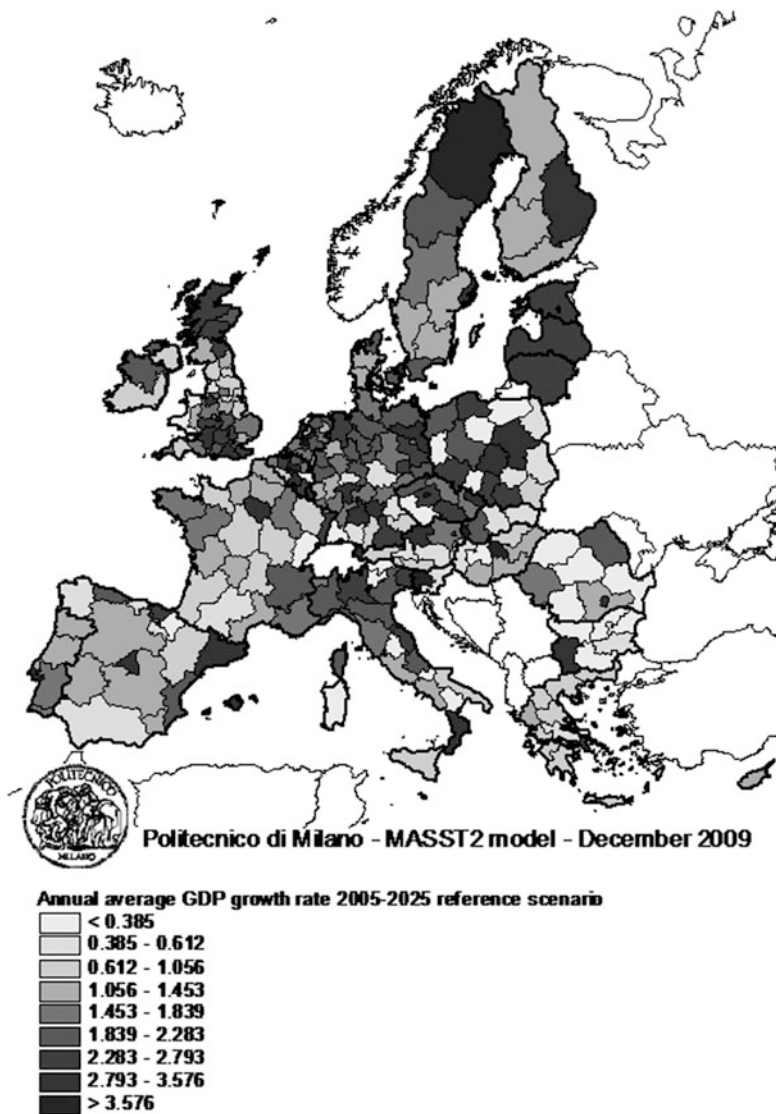
This pattern is confirmed in what is called the “Latin Arc” (Spain, France, Italy). The highest growth rates within their respective countries are experienced by Ile-de-France, Lombardy, Madrid and Catalonia, but very high growth rates can also be found in second order regions such as Valencia, Rhône-Alpes, Piedmont, Emilia-Romagna. The performance of Languedoc-Roussillon is intermediate, being the outcome of differentiated internal areas.

The pro-active scenario is more expansionary for all regions of Europe (results are not shown here). In the New Member Countries, the areas which are more able to perform a technological leap forward are the core and capital ones. Instead, among Old Member Countries, a number of second level and intermediate income areas show relevant growth rates.

Therefore, and interestingly enough, especially in the West, not necessarily the core regions benefit from the stronger general growth climate, but rather a number of second level areas. For example, Poznań in Poland, a large number of intermediate regions in Germany, Bruges and Gent in Belgium, Porto in Portugal, all



**Fig. 7.2** Alternative growth paths out of the crisis: a quantitative analysis. (a) reference scenario, (b) pro-active scenario, and (c) defensive scenario. Source: Camagni and Capello (2011)



**Map 7.1** Annual average regional GDP growth rates in the Reference scenario (2006–2025)

register a difference of annual GDP growth rate with respect to the Reference scenario which is higher than their respective capitals.

In the defensive scenario, due to lack of aggregate demand, insufficient investment and decline of manufacturing, rural and intermediate income areas are those which lose more, whereas capital regions are more able to survive the hard times; growth rates in this scenario are significantly higher in Eastern metropolitan regions.

The total level of regional disparity in Europe increases in all three scenarios, but especially in the defensive one as only the most important metropolitan areas are able to react and the weakest countries suffer the most from the general protectionist attitude.

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## **7.5 Policy Suggestions**

### **7.5.1 Short and Long Term Policies**

One of the most relevant efforts in economic policy making for the years to come concerns the strengthening of the link between short and long-term interventions, to be achieved through what are increasingly called “smart investments”. The general aim should be to revitalize internal demand while at the same time boosting local and national competitiveness (and controlling for excessive public budget deficits).

On a scenario time span reaching 2025, the necessary structural policies become central, and in fact they represent a constituent and consistent part of the scenarios that are presented. Even in the reference scenario, they are present in the form of some support to the emergence of a new production paradigm, namely the “green economy” one, orienting in a consistent and synergic direction both public and private investments.

But linking short and long-term goals and tools is not the only request for effective economic and structural policies. A similar consistency is requested among the actions of different government levels, from Community to national, regional and local. This goal can be achieved through explicit coordination efforts (“multi-level governance”) or implicit synergetic behaviour, each policy layer operating with its own instruments and inside its own competences with a full complementary attitude. This requested cooperative behaviour implies, in operational terms, two main elements: a strong permeability between policy layers, and the relevance of local policies, acting on the different aspects of territorial capital and implemented through inclusionary processes of vision building and project elaboration.

#### **7.5.1.1 Demand Policies**

The most urgent part of demand policies concerns the design of an exit strategy from the present deficit of Member States budgets, reducing reliance on public expenditure. Direct public intervention through public demand should be substituted by less expensive, indirect public expenditure—e.g. in the form of incentives to private demand—or by appropriate regulatory policies, with the aims to:

- create new sources of aggregate demand, like the opening up of new international markets in developing countries, is a second task;

- support the launching of new production paradigms, implying multiple technological advances, multiple applications in a wide array of sectors, multiple possibilities of product innovations;
- conquer new internal and international markets through enhanced competitiveness of local production;
- use in a smart way the existing public procurement of goods and services, although due to shrink, for the creation of an initial market for advanced, environment friendly products, in the building and construction field, in advanced telecommunication networks and services, in the provision of many e-services like health, social assistance, e-governance in general.

### 7.5.1.2 Supply Policies

Different tasks are assigned to supply policies. The first is that supply policies mainly concern the efficiency and innovativeness of the production fabric, which, on its turn, depends widely upon national context elements but also, and particularly, upon local context elements.

The second task assigned to these national, supply-side policies concern wide investments with an inter-regional interest. An important case was found during this research work: the transport integration of the Latin Arc regions. In fact, the western Mediterranean macro-region, in spite of the many common characteristics and the sharing of the sea resource, still shows a striking fragmentation in terms of mobility infrastructure (and consequently, in terms of economic integration). The case is also present for exploring deeper inter-regional co-operation, in the form of the creation of “synergy networks”: between ports, with a commodity and branch specialization; in the spheres of tourism, building integrated “itineraries” in both maritime cruise and city/cultural tourism; among knowledge centres, for cooperation in R&D and advanced education.

### 7.5.2 Regional Policies: Territorial Capital and Territorial Platforms

Another relevant case for supply-side policies implies important responsibilities for regional and local governments: the accumulation and best utilisation of “territorial capital”, as indicated by an important statement of DG Regio of the EU Commission, still not sufficiently elaborated both by the scientific and the operative policy *milieu* (European Commission 2005, p. 1).

The concept of territorial capital was first proposed in a regional policy context by the OECD in its *Territorial Outlook* (OECD 2001). For the sake of simplicity, we may mention four large classes of territorial capital elements (Camagni 2009):

- *infrastructure capital and settlement structure*, encompassing also the characteristics of the urban system and the quality of the environment;
- *cognitive capital*, in the form of knowledge, competence, capabilities, educational and research structure, embedded in both productive capital and human capital;



- *cultural and identitarian capital*, encompassing cultural heritage, landscape and natural capital;
- *social and relational capital*, in the form of both civicness and associative capabilities.

Acting on territorial capital in policy making means acknowledging the integrated nature of any policy strategy, the added value on intervening on different but linked localized assets at the same time, promoting network relations and supporting innovative projects emerging thanks to these relations. The main messages reside in the necessity to better integrate the traditional spatial development policies into each territory, through an harmonious merging of material and non-material elements, functional and relational assets, economic, social and environmental aspects; to create new cooperation networks among local actors and willing and cohesive local communities; to focalize on excellence assets in the spheres of knowledge, culture, natural and cultural heritage, and support innovation through synergetic behaviour.

This integration strategy could be properly synthesized and made operational through the concept of “territorial platforms”. Intervening through territorial platforms means exactly to aim at a full integration—in physical, economic, social and aesthetic terms—of new development projects into the local realm. Three main “platforms” are proposed here: *infrastructure platforms, knowledge platforms and identity platforms*.<sup>7</sup>

### 7.5.2.1 Infrastructure Platforms

New infrastructure platforms will allow the achievement of some basic priorities: improving the internal integration of entire macro-regions, especially those across national borders; boosting external accessibility of each region with respect to external territories, in order to achieve enhanced competitiveness and attractiveness; reaching a higher internal efficiency of large metropolitan areas through a polynuclear urban structure. This implies better and integrated rail network in many regions and the use of new “highways of the sea” (e.g. in the Mediterranean regions); improved linkages of large metropolitan areas with the main European corridors; new orbital railway systems internal to the main metropolitan regions, in order to boost accessibility of second rank subcentres and avoid sprawl (e.g., in the Paris, Barcelona, Milan metropolitan regions).

### 7.5.2.2 Knowledge Platforms

Knowledge platforms represent systems of cooperation networks between the main actors of the knowledge society: advanced research institutions, high education institutions, advanced and dynamic firms. Local firms are not only the recipients of the output of the specialised knowledge plexus (institutions working on scientific

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<sup>7</sup>For an operational application of this concept to the case of the Latin–Mediterranean regions, see the ESPON project quoted in footnote 1 and Camagni and Capello (2011).

and applied research), but are the carriers of long standing local production competence and know how, and therefore they represent a crucial partner in any innovation and technological advancement strategy. Particular attention should be paid by policy makers not just to achieve fruitful cooperation between these three local actors (in line with the up-to-now successful experience of the French “*pôles de compétitivité*”), but also to monitor the persistence of local production knowledge which could be jeopardised by a too fast delocalisation of sensitive parts of the production *filières*.

Knowledge platforms may be structures through:

- the synergy and cooperation between the above-mentioned main actors of the knowledge society into what may be called the local “competence poles”;
- the inclusion of innovative firms in these cooperation agreements, working on the industrial “vocations” and the specificities of territories;
- the development of other *filières*, linking excellence local natural and productive assets with knowledge and competence poles. The agri-food-tourism *filière* supplies huge potential benefits. Similar virtuous circles refer to the health and wellness *filière*, linking local know-how in medical technologies with the increasing specialisation in wellness services and accommodation facilities for an increasing population of European retirees;
- an increasing engagement in the different fields and niches of the green economy paradigm (bio-mass and solar energy production, energy technologies and research, energy-friendly buildings).

### 7.5.2.3 Identity Platforms

Identity platforms exploit natural wealth and local cultural heritage for the development of new economic and employment opportunities. Local identities may become effective “brands” for new, selective and sustainable forms of tourism, but also for the advertising of ancient local competences embedded in food and wine productions and in local handicraft products. An integrated strategy for linking up all the preceding elements with new physical accessibilities, careful site information, worldwide marketing and enhanced logistic receptivity may prove extremely effective.

Local identities have to be re-discovered and interpreted on a wide area level; single pieces of cultural heritage have to be linked with each other in larger and consistent “itineraries”, integrated in both information and logistic terms, in order to reach appropriate critical mass and new visibility on the international tourist market.

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## 7.6 Conclusions

The present economic crisis is analyzed by highlighting the huge contradictions that emerged in the recent past, and the structural changes that will take place as a result of the crisis: the debt-driven aggregate demand in advanced countries, widely

responsible for the emergence and sudden explosion of the real estate bubble; the financialization of western economies; the strange evidence of new emerging countries like China not only supporting western and real incomes with a wide supply of low-price goods, but also supporting western (and particularly the U.S.) balance of payments. All these elements have to change in the long and are already changing.

Reflections on future scenarios are based on the way these structural changes will be perceived and dealt with by policy makers. Three different scenarios are presented. The one which proves most expansionary is the pro-active scenario, in which policy makers perceive, accept and even anticipate such changes; its effects are not homogeneous on the European territory. Interestingly enough, especially in the West, not necessarily the core regions benefit the most; in fact, a number of second level areas register a relative annual GDP growth rate higher than their respective capitals, signalling a wider spatial diffusion of the economic advantages than expected.

In order to support the expansionary, pro-active scenario, strengthening the link between short and long-term policies is of vital importance, to be achieved through what are increasingly called “smart investments”. The general aim should be to revitalize internal demand while at the same time boosting local and national competitiveness. Beyond that, renewed regional policies should focus on the strengthening of local territorial capital, through integrated measures addressed to what we call territorial platforms: infrastructure platforms, knowledge platforms and identity platforms.

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## Appendix 1: The MASST Model

*National growth* depends on the dynamics of the macroeconomic national elements: private consumption growth, private investment growth, public expenditure growth and export and import growth. This part of the model is able to capture macroeconomic (national) effects on regional growth generated by interest rates and public expenditure policies, trends in inflation rates and wages. These policies and trends differ radically among European countries (especially between the Eastern and Western ones).

In its turn, the *regional differential component* (the shift component, i.e. the relative regional growth) depends on the competitiveness of the local system, this being based on the efficiency of local resources: the increase in the quality and quantity of production factors (like human capital and population) in infrastructure endowment, in energy resources, as well as the sectoral and territorial structure of the regions and the interregional spatial linkages.

As a consequence of this double structure, MASST differs substantially from existing regional growth econometric models. These conduct direct interpretation of absolute regional growth either by replicating national macroeconomic models or by using complex systems of equations for each region that are linked to both the

national aggregate economy and the other regional economies through input-output technical coefficients determining intra- and inter-regional trade and output.

The first sub-model is a macroeconomic model applied to each of the 27 - European countries in our sample which is very similar to the standard macro-econometric models used by national governments and central banks as programming and policy support tools. MASST differs from these macroeconomic models in that only goods and service markets are specified within it, while the monetary market, the labour market, and the public sector budget receive no endogenous treatment. The national sub-model of MASST is therefore a partial equilibrium model in which prices, wages, interest and exchange rates, public spending are taken to be exogenous variables. If these characteristics of MASST can be regarded as a shortcoming, they nevertheless allow fairly simplified explanation of real growth as a function of policy tools (interest rates, exchange rate, government expenditure) or policy targets (inflation, unemployment) influenced by national or international macroeconomic trends.

According to the logic of MASST, the higher/lower relative capacity of a region to grow depends on its structural elements: its productive structure, its relative position, its accessibility, its settlement structure, its degree of economic and social integration—all elements that identify a particular economic trajectory of a local economy which may differ from the national one. Table 7.1 shows the blocks of equations that characterize the regional sub-model.

The first equation is the regional shift equation represented as a quasi-production function in a reduced form. It presents the factors thought to determine regional production capacity. These factors, which stem from both modern and traditional theories of regional growth, are the following:

- *industry and tertiary dynamics*, i.e. the increase in employment growth in the industry and in the tertiary sectors, capturing a sort of mix effect of the regional dynamics, demographic changes;
- *an intersectoral productivity*, stemming from structural features of the regions, like infrastructure endowment, accessibility, share of self-employment, quantity and quality of human capital, availability of energy resources, and the settlement structure of regions, measuring the advantages stemming from the physical organisation of the territory (agglomerated vs. dispersed regions).

Not all the explanatory variables are exogenous to the model; three of them are endogenous and allow for cumulative processes, namely (Table 7.1):

- the *dynamics of the industrial employment*, made dependent on the industrial specialisation of the region;
- the *dynamics of the tertiary employment*, made be dependent on the industrial and settlement structure of the region;
- *demographic changes* (population growth rate) are dependent on birth and death rates and on in-migration;

**Table 7.1** Outline of the MASST sub-regional blocks of equations

1)	Dependent variable: <i>regional differential shift</i>		
	Independent variables: Industrial sector dynamics	Average increase of industrial employment (lagged with respect to the dependent variable)*	
	Service sector dynamics	Average increase of service employment (lagged with respect to the dependent variable)*	
	Intersectoral productivity:	<ul style="list-style-type: none"> <li>– infrastructure endowment</li> <li>– share of self-employment</li> <li>– quality of human capital</li> <li>– population growth*</li> <li>– energy resources</li> <li>– human capital</li> <li>– rural vs. agglomerated vs. urban regions;</li> <li>– mega regions</li> <li>– spatial spillovers*</li> <li>– EU funds (structural funds)</li> </ul>	
2)	Dependent variable: <i>Average increase of industrial employment</i> Independent variable: Industrial specialization of the regions		
3)	Dependent variable: <i>Average increase of tertiary employment</i> Independent variable: Past industrial structure    Settlement structure of the region		
4)	Dependent variable: <i>population growth</i> Independent variables:		
	Birth rates	Death rates	Net in-migration*
5)	Dependent variable: <i>net immigration</i> Independent variables:		
	Regional differential growth	Unemployment rate	Regions' settlement structure

Variables with \* are endogenous variables in the model

- in its turn, *in-migration* is dependent on regional income differentials, unemployment rate, and on the different settlement structures of regions;
- the part of regional growth dependent on the other regions' dynamics (*spatial spillovers*) is dependent on the regional growth of neighbouring regions in the previous year.

The simulation procedure is based on seminal ideas about the driving forces of change and their (quantitative) impact on national and regional growth. In our methodology the quantitative impact is obtained by inserting the change in the values of the variables representing the drivers of growth in a quantitative economic model developed for this purpose.

The output of the simulation procedure is represented by new values for the endogenous variables. These are calculated by the model at each run (i.e. at each year end) using the equations with the estimated coefficients in the model. There are 12 endogenous variables in total. All other variables are exogenous in the model and represent the levers used to produce different scenarios.

**Table 7.2** Logics of the simulation procedure

Forecasts	Year t		Year t + 1 (and thereafter)*
Estimated national growth	A <sub>t</sub> ) Calculation of actual <i>national growth</i> with the national sub-model (output of MASST at time t)		A <sub>t+1</sub> ) Calculation of actual <i>national growth</i> with the national model, as a function of lagged potential growth (output of MASST at t + 1)
	B <sub>t</sub> ) Calculation of <i>regional differential shift</i> with the regional sub-model		B <sub>t+1</sub> ) Calculation of <i>regional differential shift</i> with the regional model
Estimated regional growth	C <sub>t</sub> ) Actual regional growth is calculated as the <i>sum of A and B</i> , where B is rescaled to have 0 mean within each country (Output of MASST at time t)		C <sub>t+1</sub> ) Regional growth is calculated as the <i>sum of A and B</i> , where B is rescaled to have 0 mean within each country (Output of MASST at t + 1)
	D <sub>t</sub> ) Potential regional growth is equal to the <i>sum of A and B</i> (non-rescaled) Potential national growth is equal to the increase in the sum of potential regional income levels in D <sub>t</sub>		D <sub>t+1</sub> ) Potential regional growth is equal to the <i>sum of A and B</i> (non-rescaled) Potential national growth is equal to the increase in the sum of potential regional income levels in D <sub>t+1</sub>

\* The last year for which official statistics were available at the beginning of the estimations was 2002

Source: Capello et al. (2008)

Operationally, the generative element in the MASST model is taken into account in the simulation procedure as follows. In the first year of simulation (2007), a value for national growth is obtained from the national sub-model (point A in Table 7.2); at the same time a value for the differential shift is obtained from the regional sub-model (point B in the same table). The weighted average of regional shifts may be different from 0. However, because regional growth in an ex-post perspective is by definition redistributive, the new value of regional growth is obtained as the sum of the national growth and regional differential components, rescaled so that it is equal to the national value (point C). This represents the ex-post regional growth which is embedded in the national growth.

Thanks to this simulation algorithm, MASST can be definitely interpreted as a “generative” model: ex-ante regional growth rates play an active role in defining national growth. Ex-post, the national account identity is fulfilled.

## Appendix 2: Quantitative Assumptions

The three tables below report for each assumption in each scenario the lever of the MASST model used in the simulation exercise. In particular Table 7.3a reports the assumptions for the reference scenario, Table 7.3b contains those for the pro-active scenario, and Table 7.3c those for the defensive scenario.

**Table 7.3** The quantitative hypotheses of the MASST2 model in the three scenarios

(a) Reference scenario	
Reference scenario hypotheses	MASST hypotheses (with respect to the past)
Reduction of the amount of external FDIs into Europe	Reduction in the share of FDI on GFCF
The US dollar will lose its importance as reserve currency	Revaluation of Euro
Deflationary effect of Asia on world economies attenuated	Higher inflation rates with respect to the past
Recovery of some manufacturing activities in Europe, especially open ones	Increase in growth rates of open sectors and decrease in the others
A number of new technologies will develop: nanotech, biotech, transport technologies, new materials	Increase in growth rates of open sectors and decrease in the others
Aging and immigration in largest cities	Increase in death rates and decrease in birth rates, stronger in non agglomerated regions
Rising interest rates	Rising interest rates
Limited trade increase	Lower constant of import and exports
BRICs enter progressively in the medium and high technology game	High growth rate of BRICS
Increase in oil prices due to oil demand increase: new investments in exploration and discovery	Increase in energy prices
(b) Pro-active scenario	
Pro-active scenario hypotheses	MASST hypotheses (with respect to reference scenario)
BRIC countries also moving towards more technology-intensive activities with better paid jobs; deflationary effect of Asia on world economies disappears	Higher increase in BRICs growth rate
Recovery also in USA and Japan	Higher growth in USA and Japan
The dollar is no longer the sole reserve currency; it devaluates with respect to the euro	Euro revaluation
A more stable international financial order emerges	Only slightly higher inflation, despite high growth
Boosting technological investments and productivity in Europe	Lower unit labour costs
Higher skills and qualifications are required	Higher HRST, especially in strong regions
Increase in oil prices due to oil demand increase, partially counterbalanced by the development of the green economy	lower increase in energy prices
Advanced economies moving towards technology oriented activities, implementing resolutely the "green economy"	lower increase of energy consumption
Technological investments boost productivity; the unemployment rates increase further in a first phase (5–7 years) and decrease significantly afterwards	Higher unemployment rates, especially in weakest areas

(continued)

**Table 7.3** (continued)

Race towards stronger tertiarisation attenuated thanks to a rapid development of the “green economy”	
Investments from Europe and BRICs in poor countries (like Africa) will increase in order to create local markets Non-European FDI will slow down, but BRICs and Sovereign Funds investments will endanger competitiveness of EU	Lower FDI in Eastern regions
Impact of demographic change on (skilled) manpower shortage	Higher natality and lower mortality especially in weaker areas
(c) Defensive scenario	
Defensive scenario Hypotheses	MASST hypotheses (with respect to reference scenario)
Deflationary effect of Asia remains: inflation rate is lower	Lower inflation rate
The Euro does not achieve to become a reliable reserve currency	Lower revaluation of Euro
More European businesses are taken over by non-European groups, which means in a first instance more inward capital flows. These are however for short term profits and for appropriation of technology	Higher FDI in Eastern regions
In US the internal demand remains low, because households put a higher priority on savings than consumption	Lower growth rate of USA and Japan
BRICs maintain their comparative advantage in low-cost production; they however progress also in more technology-intensive sectors, competing more intensively with Europe	Lower growth rate of BRICS
Service sector is less qualified than in the reference scenario. Low profile tertiary activities such as call centres, dominate	Decrease of growth rate of open sectors and increase of base tertiary sectors
Loss of competitiveness of the European system in the long run	Lower increase of HRST
Less increase in oil prices; the increase is partially due to the use of traditional energy technologies	Lower increase in energy prices
The green economy cannot make a real breakthrough	Higher energy consumption
While employment remains relatively protected during the first phase (5–7 years), the situation worsens afterwards	Lower unemployment rates, especially weaker areas



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